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EXAMINER	
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ART UNIT	PAPER NUMBER
1791	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/568,532	STEUER ET AL.	
	Examiner	Art Unit	
	AMJAD ABRAHAM	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 June 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4,5,7-23,25-27,29-31,33 and 38-46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4,5,7-23,25-27,29-31,33 and 38-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicant's remarks and amendments, filed on June 17, 2010 have been carefully considered. Claim 28 has been canceled. Claim 1 is currently amended. Claims 1, 4-5, 7-23, 25-27, 29-31, 33, and 38-46 are still pending review in this action.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. 35 USC 112 2nd paragraph rejections of claims 18 and 20 (seen in previous office action dated 03/17/2010) have been withdrawn due to applicant's amendments.

New Grounds of rejection due to applicant's amendment of claim 1 incorporating the subject matter of claim 18 into claim 1 and amending obtainable to obtained in line 7.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1, 7, 13, 15, 17-19, 21-23, 27-29, 33, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann (WIPO Publication WO 02/12356 A2) in view of Keane et al. (USP No. 5,886,075) in further view of Ardis et al. (USP No. 3,514,435) as evidenced by Blatz (USP No. 5,770,654).

4. Regarding claim 1, Hoffman teaches a process for producing a pellet of a Polyvinyl Butyral containing composition. **(See abstract)**. Examiner would like to point out that Polyvinyl Butyral is a specific type of a polyvinyl acetal.

a. Hoffman goes on to teach the method comprising:

i. Providing a polyvinyl acetal (PVB—Polyvinyl Butyral) containing composition. **(See page 5 line 1 to page 6 line 14)**.

ii. Extruding said composition using a twin-screw extruder. **(See page 6 line 6)**.

iii. At a temperature from 100C to 260 C. **(See page 5 lines 12-13)**.

iv. To provide a melt (molten state). **(See page 5 lines 1-5)**.

v. And pelletizing (granulating) the melt to form desired product. **(See page 5 line 5)**.

(1) Applicant has defined granulating to include pelletizers. **(See page 7 lines 15-25 of applicant's specification)**.

b. With respect to claim 1, Hoffman does not expressly teach: (1) wherein the twin screw extruder has a main inlet and a side stream inlet and wherein the side stream inlet contains at least one part of the polyvinylacetal containing composition and (2) wherein the polyvinylacetal is obtained through the reaction of Polymer (A) and compound (B).

c. However, Keane teaches an extrusion process for extruding PVB material. Keane discloses that an extruder can have raw material (PVB) and additives fed at many points downstream of the initial raw material feed. **(See column 7 lines 5-12)**. Keane teaches that there is a main inlet (Barrel No. 1) and a side stream inlet (Barrel No. 4). The side stream inlet (satellite recycle extruder) is a recycle stream of PVB. **(See figure 2 and column 3 lines 4-16)**.

vi. It would have been obvious to one having the ordinary skill in the art to combine the teachings of Hoffman and Keane for the benefit of increasing efficiency of plant productions. The use of side streams and recycles are well known in the extrusion art and one having the ordinary skill in the art would undertake routine experimentation to investigate the best ways to blend the extrusion components that are necessary. In this case the recycled PVB may already have plasticizer mixed within, so one

skilled in the art would realize that it need not be further mixed with additional plasticizer as seen in figure 2 of Keane.

vii. Additionally, Hoffman discloses that PVB can be blended with polypropylene, polyamide, polyolefins, and PVC. As an example of a PVB/PP blend Hoffman discloses as evidence Blatz (USP No. 5,770,654). **(See page 1 line 31 to page 2 line 3)**.

(2) Blatz discloses that PVB is sensitive to high temperatures. **(See column 3 lines 2-9 of Blatz)**. Blatz discloses that one having the ordinary skill in the art, with routine experimentation, would be able to determine and control the shear and temperature extrusion conditions for the PVB. It would have been obvious to one having the ordinary skill in the art to feed PVB downstream in an extrusion section which does not reach the sensitive high temperature or shear conditions which affect PVB's ability to be processed by extrusion.

d. With respect to claim 1, the combination of Hoffman and Keane do not expressly teach wherein the polyvinylacetal is obtained through the reaction of Polymer (A) and compound (B).

viii. *First, examiner would like to point out that polymer (A) can be 100% (a) which is polyvinyl alcohol and compound (B) is a formaldehyde if both R7 and R8 are hydrogens*.

ix. *Second, examiner would like to point out that polymer (A) can be 100% (a) which is polyvinyl alcohol and compound (B) can be a homologue of butyraldehyde if R7 is a Hydrogen and R8 is C6 alkyl group*.

e. However, Ardis teaches that it is notoriously well known in the art that polyvinylacetals such as polyvinyl butyral and polyvinyl formal can be made by condensing polyvinyl alcohol (POLYMER A) with an aldehyde such as butyraldehyde and formaldehyde respectively (COMPOUND B). **(See column1 lines 26-34)**.

f. Polyvinyl Butyral and Polyvinyl Formal are homologues. (Polyvinyl butyral is made with butyraldehyde and polyvinyl formal is made from formaldehyde). As Homologues are expected to have similar properties and utility, it would have been obvious for one having the ordinary skill in the art to use longer alkyl chain groups to make a wide range of polyvinyl acetal containing compositions suitable to be processed by the method of Hofmann. Additionally, as disclosed above if compound B has hydrogen at position R7 and a C6 group at R8 the resulting compound will result in a homologue of butyraldehyde. As homologues are considered to be obvious variants absence a showing of unexpected results the claimed combination of components would have been obvious to one having the ordinary skill in the art. *Ex Parte Fauque, 121 USPQ* 425. As claim 1, requires only that the polyvinyl acetal being processed be obtained by combining polyvinyl alcohol (POLYMER A) with an aldehyde (COMPOUND B), it would have been obvious to one having the ordinary skill in the art at the time the invention was

made to combine polymer A with compound B, since it has been held to be within the general skill of a worker in the art to select known materials on the basis of its suitability for the intended use as a matter of obvious engineering choice. *In re Leshin, (125 USPQ 416)*.

5. Regarding claim 7, the combination of Hoffman and Keane does not expressly teach wherein 90 wt% of the polyvinylacetal containing composition is introduced via at least one side stream inlet.

g. However, the amount and location of the PVB introduced into an extruder would be routinely designed and optimized by one having the ordinary skill in the art depending on what additives and blending materials are used to create the end product.

h. In Hoffman, it is disclosed that PVB can be blended with polypropylene, polyamide, polyolefins, and PVC. As an example of a PVB/PP blend Hoffman discloses as evidence Blatz (USP No. 5,770,654). **(See page 1 line 31 to page 2 line 3)**. Blatz discloses that PVB is sensitive to high temperatures. **(See column 3 lines 2-9 of Blatz)**. Blatz discloses that one having the ordinary skill in the art, with routine experimentation, would be able to determine and control the shear and temperature extrusion conditions for the PVB. It would have been obvious to one having the ordinary skill in the art to feed PVB downstream in an extrusion section which does not reach the sensitive high temperature or shear conditions which affect PVB's ability to be processed by extrusion.

x. Because of temperature and shear conditions, one having the ordinary skill in the art would seek to feed the entire PVB composition in an extrusion section which was cooled or at a temperature lower than a PVB degradation temperature. As such, one having the ordinary skill in the art would have sought to feed the entire PVB material at an extrusion position downstream of the high temperature or high shear extrusion area.

6. Regarding claim 13, Hofmann teaches wherein the temperature is changed as the fed material is changed into the molten state. **(See page 5 line 1 to page 6 line 14)**.

7. Regarding claim 15, Hofmann does not expressly teach wherein gaseous compounds, which arise upon conversion of the PVB to a molten state, are removed from compound.

i. However, Keane teaches wherein a vent is used on the extruder to remove volatiles. **(See column 2 line 63 to column 3 line 3)**.

j. The uses of vents are notoriously well known in extrusion systems for removing volatiles (gases) from the extrusion process. It would have been obvious to one having the ordinary skill in the art to use a vent in the extruder of Hofmann/Keane in order to extract vapors which can cause bubble formation in a product stream.

8. Regarding claim 17, Hofmann does not expressly teach wherein the side stream (recycle stream) input takes place with a dosing device with one or two screw conveyers.

k. However, Keane teaches wherein a dosing extruder (satellite extruder) can be used to supply the recycle feed. **(See column 3 lines 4-23)**.

l. The use of a side stream dosing extruder would be necessary to transfer a recycle stream or prepare a feed stream prior to entry into an extruder. It would have been obvious to one having the ordinary skill in the art to utilize a dosing extruder to allow recycled material to be pre-worked prior to entry into an extruder.

9. Regarding claims 18-19, Hofmann does not expressly teach: (1) that the extruder screws diameter is larger than the screw diameter of the side stream dosing, (2) that the ratio of the screw diameter of the extruder to the screw diameter of the side stream dosing lies in the range from 1.1:1 to 10:1.

m. However, it would have been obvious to one having the ordinary skill in the art that the main extruder would have larger diameter screws as more material is processed in the main extruder than the dosing extruder.

10. Regarding claims 21 and 33, Hofmann does not teach that the composition for manufacture of granulate which contains the polyvinylacetal, has a glass transition temperature greater than or equal to 0.degree. C.

j. However, it would have been obvious to one having the ordinary skill in the art, that PVB, would have to have a glass transition temperature much higher than the ambient temperature of the earth in order to withstand deformation, as the PVB in Hofmann is used for imparting shatter resistance to glass. If the glass transition is under 0C, the sheet would deform.

11. Regarding claims 22 and 27, Hofmann teaches wherein the PVB can be mixed at a ratio from 1:100 to 100:1 with a second component. **(See page 5 line 6)**.

12. Regarding claim 23, Hofmann does not teach wherein the composition for manufacture of granulates, which contains the polyvinylacetal, contains at the most 2 wt % external softener. At most 2% includes zero.

e. Since at most 2% includes 0 Wt%, it is not necessary that Hoffman/Keane contain an external softener.

13. Regarding claim 28, Hofmann does not expressly teach wherein the polyvinylacetal is obtainable through a reaction of a least polymer A with compound B.

n. However, the use of the claim limitation "obtainable" renders this claim limitation as one of many formulations that would qualify as a polyvinyl acetal containing material. As Hofmann discloses, PVB which is a specific example of a polyvinyl acetal containing composition, it would have been obvious to one having the ordinary skill in the art to use many combinations of materials to create a material suitable for the intended end use of the product.

14. Regarding claim 29, Hofmann teaches wherein addition components such as blends are used. It is disclosed that PVB can be blended with polypropylene, polyamide, polyolefins, and PVC. **(See page 1 line 31 to page 2 line 3)**.

o. In addition, Keane discloses the use of adhesion control additives and plasticizer to improve the flowability or extrusion of the melt.

p. It would have been obvious to use an adhesion control additive in Hofmann because PVB tends to adhere to itself.

15. Regarding claim 39, Hofmann teaches wherein the extruding temperature is between 100C to 260C. **(See page 5 lines 12-13)**.

16. Claims 4 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann (WIPO Publication WO 02/12356 A2) in view of Keane et al. (USP No. 5,886,075) in further view of Ardis et al. (USP No. 3,514,435) as evidenced by Blatz (USP No. 5,770,654) in view of Schwind et al. (US Pre-grant Publication 2002/0017735 A1).

17. Regarding claims 4 and 38, Hofmann does not teach wherein the pelletization/granulation is carried out by either hot or cold pelletization techniques.

q. However, Schwind teaches that when extruding a polymer based material to form a melt, granulation/pelletization is usually utilized to further process the extrudate material. **(See paragraph 0131)**.

r. As hot/cold pelletization is well known in the art of granulation, it would have been obvious to one having the ordinary skill in the art to use such process to further process the extrudate to a pelletized material. This end product (pellets) are typically used in further processing for making films and the like.

18. Claims 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann (WIPO Publication WO 02/12356 A2) in view of Keane et al. (USP No. 5,886,075) in further view of Ardis et al. (USP No. 3,514,435) as evidenced by Blatz

(USP No. 5,770,654) in view of Higuchi et al. (Japanese patent Publication JP 59-166549).

19. Regarding claim 5, Hoffman does not expressly teach wherein a foaming agent is added to the composition.

s. However, Higuchi teaches that in processing polymeric materials (such as Polyvinyl acetal), it is known to add foaming material in order to form pores. **(See abstract)**.

t. The use of foam is well known when making a porous or light weight material. It is well known in the art that polymer compositions may be converted to foam products using physical and/or chemical blowing agents. Therefore, it would have been obvious to one having the ordinary skill in the art to use a foaming agent of blowing agent to make a material to be used in making foamed products.

20. Claims 8-12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann (WIPO Publication WO 02/12356 A2) in view of Keane et al. (USP No. 5,886,075) in further view of Ardis et al. (USP No. 3,514,435) as evidenced by Blatz (USP No. 5,770,654) in further view of Kiyono et al. (USP No. 3,679,788).

21. Regarding claims 8 and 12, the combination of Hofmann and Keane, does not expressly teach wherein the side stream inlet is cooled and wherein the cooling

temperature is less than or equal to the glass transition temperature of the polyvinyl acetal containing composition. .

u. However, the side stream inlet would typically be at ambient conditions, these ambient conditions would ensure that the inlet material is below the melt temperature of glass transition temperature of the polymer being fed. This is an important consideration since feed line plugging or unwanted melting is an issue in extrusion processes.

v. As it is well known in the art to prevent unwanted melting by cooling the section to below melt or flow temperatures like the glass transition temperature, it would have been obvious to ensure that the PVB pellets of Hofmann would remain in solid form until inside the extruder. Hofmann discloses that PVB is difficult to work with as it sticks to itself. **(See page 2 lines 4-18)**. To solve this problem, Hofmann discloses that it is well known in the art to store PVB cold in order to reduce this adhering effect. Therefore, it would have been obvious to one having the ordinary skill in the art

w. Furthermore, Kiyono teaches that cooling means (cooling water) may be used to prevent unwanted melting in certain areas of an extruder. **(See column 4 lines 39-51 and claim 8)**.

22. Regarding claims 9-11 and 14, Hoffman does not teach: (1) wherein the region of the extruder from the main inlet up to a length of the screw (15 L/D) is cooled; (2) wherein at least one of the extruder screws are cooled; and (3) wherein the region of the extruder from the main inlet up to a length of the screw (10 L/D) is cooled.

x. However, Kiyono teaches wherein to control unwanted melt, cooling the screws and/or cylinder may be instituted to ensure the resin is not heated above a degradation temperature. **(See column 4 lines 39-51 and claim 8)**.

y. It would have been obvious to one having the ordinary skill in the art to control regions of the extruder which are to be kept at a temperature under a degradation temperature to ensure that the PVB does not deteriorate during extrusion.

23. Regarding claim 14, Hofmann teaches wherein the temperature is changed as the fed material is changed into the molten state. **(See page 5 line 1 to page 6 line 14)**.

24. Claims 16 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann (WIPO Publication WO 02/12356 A2) in view of Keane et al. (USP No. 5,886,075) in further view of Ardis et al. (USP No. 3,514,435) as evidenced by Blatz (USP No. 5,770,654) in view of Fowell (USP No. 4,335,036) further view of Ealer (USP No. 4,594,213).

25. Regarding claim 16, the combination of Hofmann/Keane does not expressly teach wherein the main port (hopper) is used to remove gases.

z. However, Fowell teaches that when processing PVB a vented extruder is used. **(See column 6 line 52)**.

xi. Ealer teaches that when extruding a polymer material, it is important to remove volatiles from the extruder in order to eliminate

bubble formation. Ealer provides many examples for removing volatiles such as vented, extrusion, vacuum hopper, and screw designs. As vented extrusion and a vacuum hopper are interchangeable for solving similar problems, it would have been obvious to one having the ordinary skill in the art to minimize volatiles by using vacuumed feed hoppers which can remove volatiles that form bubbles. **(See column 4 lines 7-24)**.

26. Regarding claim 46, the combination of Hofmann and Keane do not expressly teach wherein at least 70 wt% of polyvinylacetal is introduced in screw extruder through a side stream inlet and wherein the main inlet has an opening from which volatiles can escape.

aa. However, the amount and location of the PVB introduced into an extruder would be routinely designed and optimized by one having the ordinary skill in the art depending on what additives and blending materials are used to create the end product.

bb. In Hoffman, it is disclosed that PVB can be blended with polypropylene, polyamide, polyolefins, and PVC. As an example of a PVB/PP blend Hoffman discloses as evidence Blatz (USP No. 5,770,654). **(See page 1 line 31 to page 2 line 3)**. Blatz discloses that PVB is sensitive to high temperatures. **(See column 3 lines 2-9 of Blatz)**. Blatz discloses that one having the ordinary skill in the art, with routine experimentation, would be able to determine and control the shear and temperature extrusion conditions for the PVB. It would have been obvious to one having the ordinary skill in the art to feed PVB downstream in an extrusion

section which does not reach the sensitive high temperature or shear conditions which affect PVB's ability to be processed by extrusion.

xii. Because of temperature and shear conditions, one having the ordinary skill in the art would seek to feed the entire PVB composition in an extrusion section which was cooled or at a temperature lower than a PVB degradation temperature. As such, one having the ordinary skill in the art would have sought to feed the entire PVB material at an extrusion position downstream of the high temperature or high shear extrusion area.

cc. Additionally, Fowell teaches that when processing PVB a vented extruder is used. **(See column 6 line 52)**.

xiii. Ealer teaches that when extruding PVB, it is important to remove volatiles from the extruder in order to eliminate bubble formation. Ealer provides many examples for removing volatiles such as vented, extrusion, vacuum hopper, and screw designs. As vented extrusion and a vacuum hopper are interchangeable for solving similar problems, it would have been obvious to one having the ordinary skill in the art to minimize volatiles by using vacuumed feed hoppers which can remove volatiles that form bubbles. **(See column 4 lines 7-24)**.

27. Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann (WIPO Publication WO 02/12356 A2) in view of Keane et al. (USP No.

5,886,075) in further view of Ardis et al. (USP No. 3,514,435) as evidenced by Blatz (USP No. 5,770,654) in further view of Nachtergaele et al. (USP No. 5,032,337).

28. Regarding claims 17-20, Hofman and Keane does not expressly teach: (1) that the side stream input takes place by means of a dosing device with one or two screw-conveyors, (2) that the extruder screws diameter is larger than the screw diameter of the side stream dosing, (3) that the ratio of the screw diameter of the extruder to the screw diameter of the side stream dosing lies in the range from 1.1:1 to 10:1, and (4) that the temperature in the region of the side stream dosing is less than or equal to the glass transition temperature of the composition which contains at least one polyvinylacetal.

h. However, Nachtergaele discloses the use a dosing screw unit which delivers material to the extrusion screws. **(See column 3 lines 24-34)**.

i. It would have been obvious to one having the ordinary skill in the art to use a dosing screw as the side stream inlet to the extrusion screw to control the amount of feed materials are present to ensure a proper blending of ingredients and thus a uniform end product. The extruder screw diameter is typically larger in order to accommodate the dosing stream inlet plus additional additives that are added to the extruder blend. As the extruder handles a higher quantity of material the extruder screw would obviously have to be bigger in order to have a uniform flow rate. Furthermore the determination of the ratio of screw diameter of the dosing stream and extruder is a matter of conventional design that would be routine among feed inlet and side inlet design when creating an extrusion

system. Also it is important in feed/sidestream inlet design to keep the dosing stream cooled to that no polymerization will occur in the line that will plug the dosing stream. It would have been obvious to one having the ordinary skill in the art to do this to minimize extruder shut down due to plugging of the dosing lines.

29. Claims 25-26 and 40-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann (WIPO Publication WO 02/12356 A2) in view of Keane et al. (USP No. 5,886,075) in further view of Ardis et al. (USP No. 3,514,435) as evidenced by Blatz (USP No. 5,770,654) in view of Lerman et al. (USP No. 3,472,801).

30. Regarding claims 25-26 and 40-45, the combination of Hofmann and Lerman do not expressly disclose the various bulk densities and particle size distribution claimed.

dd. However, Lerman specifically discloses the fact that density desired particle size are wholly dependant on the types of polymers used, additives incorporated, as well as operating conditions. **(See column 6 lines 35-43)**. Lerman goes on to teach that the average particle size can be controlled by varying the composition of the polymers, dispersing agents, and other additives. **(See column 6 line 72 to column 7 line 4)**. Furthermore, it is taught that the control of size, density, and color of the final particles will be altered depending on the use needed for the resultant product. **(See column 7 lines12-25)**.

ee. Therefore, it would have been obvious to one having the ordinary skill in the art at the time of the invention was made to produce said particle sizes and densities based on the end use for the product, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious engineering design choice. *In re Leshin, 125 USPQ 416*.

31. Claims 30-31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann (WIPO Publication WO 02/12356 A2) in view of Keane et al. (USP No. 5,886,075) in further view of Ardis et al. (USP No. 3,514,435) as evidenced by Blatz (USP No. 5,770,654) in view of Kroggel et al. (USP No. 5,559,175).

32. Regarding claims 30-31, Hofmann does not expressly teach wherein the PVAL containing granulates containing fiber strengthening materials such as glass fibers, aramid fibers, and or carbon fibers.

ff. However, Kroggel teaches that it is known in the art to add fibers in making polyvinyl acetal dispersions. **(See column 8 lines44-65)**.

gg. Furthermore, it is well known in the art to use glass or carbon fibers as filler or strengthening material. Therefore, it would have been obvious to one having the ordinary skill in the art to utilize fiber strengthening material in order to make a material which can be used to make products with increased strength and rigidity.

Response to Arguments

33. Applicant's arguments with respect to claims 1, 4-5, 7-23, 25-27, 29-31, 33, and 38-46 have been considered but are moot in view of the new ground(s) of rejection.

34. **Applicant Argument #1:**

hh. Applicant argues that the disclosure of Keane is not related to the use of Scrap PVB or the production of Pellets as the method of Hofmann requires.

35. **Examiner Response to Argument #1:**

ii. While the methods of Hofmann and Keane differ to some degree, it is the extrusion process which is taught by their combination. What Keane teaches is the well known process of utilizing recycle streams to have the most efficient and waste free process possible. As recycle material typically has additives already mixed in, the may be placed at a point down stream of the raw material and additive sections. Keane has been supplied only to teach that it is known to use multiple inlet streams to utilize any recycled product. The fact that one process forms sheets and the other process forms pellets is immaterial as it is notoriously well known in the art that an extrusion process can be retrofitted to extrude a film (sheet) or pellets. Additionally, the fact that the raw material off Hofmann is a recycled product has no affect on whether the extrusion process of Hofmann can have a recycles stream. A recycle stream is not addition recycled raw material, it is recycled material from that very extrusion process.

36. **Applicant Argument #2:**

jj. With regards to claims 4 and 38, the Schwind reference is not valid as a reference because Schwind is not a process for forming granules and pellets.

37. **Examiner Response to Argument #2:**

kk. The Schwind reference was used as a general teaching in the art of comminution (pelletizing/granulation) of an extruded melt; that the granulation can be done by hot or cold pelletization. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Schwind was used as support for that it is well known in the art to granulate an extruded stream by using a hot or cold pelletization method as either of these methods are NOTORIOUSLY well known in the art. In analyzing paragraph 0131 of Schwind, one of ordinary skill in the art would see that hot/cold pelletizing are well known granulation methods to be used in a majority of pelletizing/granulating processes.

38. **Applicant Argument #3:**

ll. Applicant argues that the examiner supplies no evidence or arguments that the side stream inlets would be cooled.

39. **Examiner Response to Argument #3:**

mm. However, in paragraph 21 (v) above, Examiner clearly shows that the primary reference (Hofmann) teaches preventing unwanted melting by cooling the section to below melt or flow temperatures like the glass transition temperature, it would have been obvious to ensure that the PVB pellets of Hofmann would remain in solid form until inside the extruder. Hofmann discloses that PVB is difficult to work with as it sticks to itself. **(See page 2 lines 4-18)**. To solve this problem, Hofmann discloses that it is well known in the art to store PVB cold in order to reduce this adhering effect. Therefore, it would have been obvious to one having the ordinary skill in the art. One having the ordinary skill in the art that at ambient/cooled conditions the PVB would be in a cooled state (not molten or sticky) during the initial feed operation to eliminate the need for additional equipment/energy to feed the material.

40. **Applicant Argument #4:**

nn. Regarding claims 25-26 and 40-45, applicant argues that Lerman (USP No. 3,472,801) is unavailable as prior art because Lerman's examples do not teach using PVB or a polyvinylacetal.

41. **Examiner Response to Argument #4:**

oo. Examiner disagrees completely with this point. There is no requirement that a prior art reference is limited to the examples of the patent.

pp. Although Lerman's examples do not teach a polyvinylacetal, Lerman expressly lists polyvinylacetal as one of a group of polymers which can be used in Lerman's process.

42. **Applicant Argument #4:**

qq. Regarding claims 30-31, Applicant argues that the fibers in Kroggel are added by gluing not dispersed during the extrusion process.

43. **Examiner Response to Argument #4:**

rr. Examiner would like to point out that claims 30-31 are drawn to the resultant product. As the claim language is open ended this granulate can be post processed such as fiber gluing to produce the resultant product.

Conclusion

44. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AMJAD ABRAHAM whose telephone number is (571)270-7058. The examiner can normally be reached on Monday through Friday 8:00 AM to 5:00 PM Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Phillip Tucker can be reached on (571) 272-1095. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AAA

/Philip C Tucker/

Supervisory Patent Examiner, Art Unit 1791